



SAFETY DATA SHEET

According to EC 1907/2006 (REACH)

Date last verification : 2015-01-30
Revision date : 2012-07-21
Publication date : 2005-06-17

Version number : 2.1

1. Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

SDS : 22606
Product code 12nc : 9898 031 08811
Supplier : MICRO POWER ELECTRONICS, INC.

13955 SW Millikan Way
OR 97005 Beaverton
Oregon
United States of America
TEL:+1 503-693-7600
FAX:+1 503-648-9625

Tradename : FR2 LIMNO2 BATTERY (989803108811) (M3863A) : LITHIUM METAL BATTERIES [6.72 G LITHIUM]

1.2. Relevant identified uses of the substance or mixture and uses advised against

General description : BATTERY
Use : Various
Uses advised against : Data not available.

1.3. Details of the supplier of the safety data sheet

Supplier safety data sheet : Philips Electronics Nederland B.V., P.O. Box 218, 5600 MD Eindhoven, Tel. +31 (0)40 2747588
Responsible department : dangerous.goods@philips.com

1.4. Emergency telephone number

Emergency telephone number : +31 (0)497-598315

2. Hazards identification

2.1. Classification of the substance or mixture

GHS: (EC) No 1272/2008

Not classified according to GHS classification.

EC: (EC) No 67/548 or 1999/45

Not classified according to EC classification.

2.2. Label elements

GHS: (EC) No 1272/2008

GHS-Label : not applicable

Remarks on GHS-labelling : none

EC: (EC) No 67/548 or 1999/45

EC-Label : not applicable

Remarks on EC-labelling : none

2.3. Other hazards

Data not available.

3. Composition/information on ingredients

| Component | CAS-no. | Index No. | Percentage(%) | GHS-Label |
|------------------------------------|------------|------------------|---------------|---|
| | EC-no. | Registration no. | | EC-Label |
| LITHIUM | 7439-93-2 | 003-001-00-4 | | GHS02 |
| | 231-102-5 | 01-2119966143-38 | | GHS05 H260 Water-react. 1 H314 Skin corr. 1B EUH014 F,C;R: 14/15 34 |
| MANGANESE DIOXIDE | 1313-13-9 | 025-001-00-3 | | GHS07 |
| | 215-202-6 | 01-2119452801-43 | | GHS08 H302 Acute tox. 4 H332 Acute tox. 4 H361fd Repr. 2 Xn;R: 62 63 20/22 Repr.Cat. 3 |
| LITHIUM TRIFLUOROMETHANESULPHONATE | 33454-82-9 | | | GHS07 |
| | 251-528-5 | | | H315 Skin irrit. 2 H319 Eye irrit. 2 H335 STOT SE 3 Xi;R: 36/37/38 |
| PROPYLENE CARBONATE | 108-32-7 | 607-194-00-1 | | GHS07 |
| | 203-572-1 | 01-2119537232-48 | | H319 Eye irrit. 2 Xi;R: 36 |
| DIMETHOXYETHANE, 1,2- | 110-71-4 | 603-031-00-3 | | GHS02 |
| | 203-794-9 | 01-2119485981-24 | | GHS07 GHS08 H225 Flam. liq. 2 H332 Acute tox. 4 H360FD Repr. 1B EUH019 F,T;R: 60 61 11 19 20 Repr.Cat. 2 |

For the full text of the H-sentences, hazard statements and R-sentences mentioned in this section, see section 16.

4. First aid measures

4.1. Description of first aid measures

Skin : Not applicable.
Ingestion : Not applicable.
Inhalation : Not applicable.
Eyes : Not applicable.

4.2. Most important symptoms and effects, both acute and delayed

Skin local : Not applicable.
general : Not applicable.
Ingestion local : Not applicable.
general : Not applicable.
Inhalation local : Not applicable.
general : Not applicable.
Eyes local : Not applicable.
Remarks symptoms : None

4.3. Indication of any immediate medical attention and special treatment needed

None

5. Firefighting measures

5.1. Extinguishing media

Suitable fire-extinguisher

determined by surrounding

Unsuitable fire-extinguisher

not traceable

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products in fire : lithium oxide, manganese oxides, carbon monoxide, hydrogen fluoride, sulphur oxides

5.3. Advice for firefighters

In the event of fire, wear protective clothing and use breathing apparatus that is independent of the ambient air.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Precautions

Use protective equipment. See section 8.

Emergency procedure

Is not to be expected.

6.2. Environmental precautions

Remainder material has to be incinerated in_a proper installation or dumped on an approved landfill, in accordance with local and national legislation.

6.3. Methods and material for containment and cleaning up

Spillage procedure

not applicable

6.4. Reference to other sections

See section 8 for appropriate personal protection.

See section 13 for additional information on waste treatment.

7. Handling and storage

7.1. Precautions for safe handling

Observe label precautions.

Do not eat, drink or smoke in work areas. Remove contaminated clothing and protective equipment. Wash hands after leaving the work area.

Local exhausting : Under normal circumstances not applicable.

Storage code (on behalf of PGS : M4
15)

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : See also any precautionary statements and S-phrases in section 2.2.
Store product protected from proximity to other sources of heat, dry.

7.3. Specific end use(s)

Data not available.

8. Exposure controls/personal protection

8.1. Control parameters

Exposure limits :

applicable to: The Netherlands (20 °C; 1013 mbar)

| | |
|----------------------------|------------------------------------|
| No TWA has been laid down. | LITHIUM |
| TWA(8 hours): 1 mg/m3 | MANGANESE DIOXIDE(as manganese) |
| TWA(15 minutes): 3 mg/m3 | MANGANESE DIOXIDE(as manganese) |
| No TWA has been laid down. | LITHIUM TRIFLUOROMETHANESULPHONATE |
| No TWA has been laid down. | PROPYLENE CARBONATE |
| No TWA has been laid down. | DIMETHOXYETHANE, 1,2- |

applicable to: Belgium (20 °C; 1013 mbar)

| | |
|-------------------------|---------------------------------|
| TWA(8 hours): 0.2 mg/m3 | MANGANESE DIOXIDE(as manganese) |
|-------------------------|---------------------------------|

applicable to: Germany (20 °C; 1013 mbar)

| | |
|-------------------------|---|
| TWA(8 hours): 0.5 mg/m3 | MANGANESE DIOXIDE(as manganese, inhalable dust) |
|-------------------------|---|

applicable to: United States of America (25 °C; 1013 mbar)

| | |
|--------------------------|---|
| TWA(8 hours): 0.02 mg/m3 | MANGANESE DIOXIDE(as manganese, respirable dust) - [according to ACGIH] |
| TWA(8 hours): 0.1 mg/m3 | MANGANESE DIOXIDE(as manganese, inhalable dust) - [according to ACGIH] |
| TWA(8 hours): 5 mg/m3 C | MANGANESE DIOXIDE(as manganese) - [according to OSHA] |

applicable to: Sweden (20 °C; 1013 mbar)

| | |
|----------------------------|--|
| TWA(8 hours): 0.02 mg/m3 C | LITHIUM(as inhalable dust) |
| TWA(8 hours): 0.2 mg/m3 | MANGANESE DIOXIDE(as manganese, dust) |
| TWA(8 hours): 0.1 mg/m3 | MANGANESE DIOXIDE(as manganese, respirable dust) |
| TWA(8 hours): 0.02 mg/m3 C | LITHIUM TRIFLUOROMETHANESULPHONATE(as lithium, inhalable dust) |

applicable to: Switzerland (20 °C; 1013 mbar)

| | |
|-------------------------|---|
| TWA(8 hours): 0.5 mg/m3 | MANGANESE DIOXIDE(as manganese, inhalable dust) |
|-------------------------|---|

applicable to: China (20 °C; 1013 mbar)

| | |
|--------------------------|-------------------|
| TWA(8 hours): 0.15 mg/m3 | MANGANESE DIOXIDE |
|--------------------------|-------------------|

C=Ceiling; S=Skin

Remarks exposure limits :

none

DNEL (Derived No Effect Level)

Data not available.

PNEC (Predicted No Effect Concentration)

Data not available.

8.2. Exposure controls**Advised personal protection :**

| | | |
|-------------------|---|---------------------------|
| Hands | : | not applicable |
| Breakthrough time | : | not applicable |
| Eyes | : | not applicable |
| Inhalation | : | not applicable |
| Skin | : | none (when used normally) |

9. Physical and chemical properties**9.1. Information on basic physical and chemical properties**

| | | | |
|--|---|--------------------|------------------------------------|
| Physical state | : | battery | |
| Colour | : | type dependent | |
| Odour | : | odourless | |
| Odour threshold (20°C; 1013 mbar) | : | not traceable | |
| pH | : | not applicable | |
| Melting point/range | : | not traceable | |
| Boiling point/range | : | not traceable | |
| Flash point/range | : | not applicable | |
| Vapor rate/range | : | not applicable | |
| Flammability (solid, gas) | : | data not available | |
| Explosive limits | : | not applicable | |
| Vapour pressure | : | not applicable | |
| Density | : | not traceable | |
| Solubility in water | : | not applicable | |
| Log Po/w | : | <0 | MANGANESE DIOXIDE |
| | | -0.49 | LITHIUM TRIFLUOROMETHANESULPHONATE |
| | | -0.48 | PROPYLENE CARBONATE |
| | | | Source : IUCLID |
| | | | Source : Easi View |
| | | | Source : IUCLID |

-0.21
Autoignition temperature : not applicable
Decomposition temperature : not traceable
Viscosity : not applicable
Dust explosions possible in air : not applicable
Oxidising properties : no

DIMETHOXYETHANE, 1,2-

Source : ChemDat (Merck)

9.2. Other information

Solubility in fat : not applicable
Electrostatic chargement : not traceable

10. Stability and reactivity

10.1. Reactivity

See section 10.2 - 10.6.

10.2. Chemical stability

The substance or mixture is stable under normal conditions. See also section 10.4.

10.3. Possibility of hazardous reactions

Reactions with water : no
Other hazardous conditions : Data not available.

10.4. Conditions to avoid

Data not available.

10.5. Incompatible materials

Hazardous reactions with : none

10.6. Hazardous decomposition products

Hazardous decomposition products at heating : none

11. Toxicological information

11.1. Information on toxicological effects

Acute oral toxicity

LD-50: >3.478 g/kg (ORL-RAT)
LD-50: 29 g/kg (ORL-RAT)
LD-50: 5.37 mg/kg (ORL-RAT)
LD-50: 3.2 g/kg (ORL-MUS)

MANGANESE DIOXIDE
PROPYLENE CARBONATE
DIMETHOXYETHANE, 1,2-
DIMETHOXYETHANE, 1,2-

Source : ChemDat (Merck)
Source : IUCLID
Source : ChemDat (Merck)
Source : Sigma-Aldrich

Acute dermal toxicity

LD-50: >5 g/kg (SKN-RAT)

DIMETHOXYETHANE, 1,2-

Source : ChemDat (Merck)

Acute inhalation toxicity

There are no data available.

Ames test

negative
negative

PROPYLENE CARBONATE
DIMETHOXYETHANE, 1,2-

Source : IUCLID
Source : ChemDat (Merck)

Skin corrosion/irritation

The substance or mixture is not classified for skin corrosion/-irritation.

Serious eye damage/irritation

The substance or mixture is not classified for serious eye damage/irritation.

Respiratory or skin sensitisation

The substance or mixture is not classified for respiratory or skin sensitisation.

Germ cell mutagenicity

The substance or mixture is not classified for germ cell mutagenicity.

Carcinogenicity

The substance or mixture is not classified for carcinogenicity.

Reproductive toxicity

The substance or mixture is not classified for reproductive toxicity.

Specific target organ toxicity-single exposure

The substance or mixture is not classified for specific target organ toxicity-single exposure.

Specific target organ toxicity-repeated exposure

The substance or mixture is not classified for specific target organ toxicity-repeated exposure.

Aspiration hazard

The substance or mixture is not classified for aspiration hazard.

Symptoms

| | | |
|------------------|---------|-------------------|
| Skin | local | : Not applicable. |
| | general | : Not applicable. |
| Ingestion | local | : Not applicable. |
| | general | : Not applicable. |
| Inhalation | local | : Not applicable. |
| | general | : Not applicable. |
| Eyes | local | : Not applicable. |
| | | |
| Remarks symptoms | | : None |

12. Ecological information

12.1. Toxicity

Ecotoxicity

| | | | |
|--------------------------------|-----------------------|--------|----------|
| LC-50: 5300 mg/l/96H (Fish) | PROPYLENE CARBONATE | Source | : IUCLID |
| EC-50: >500 mg/l/48H (Daphnia) | PROPYLENE CARBONATE | Source | : IUCLID |
| IC-50: >500 mg/l/72H (Algae) | PROPYLENE CARBONATE | Source | : IUCLID |
| LC-50: >500 mg/l/96H (Fish) | DIMETHOXYETHANE, 1,2- | Source | : ACROS |

12.2. Persistence and degradability

| | | | | |
|--|-------------|---------------------|--------|----------|
| Biological oxygen demand (5) | : 0.025 g/g | PROPYLENE CARBONATE | Source | : IUCLID |
| Chemical oxygen demand | : 1.29 g/g | PROPYLENE CARBONATE | Source | : IUCLID |
| Biological(5)/chemical oxygen demand ratio | : 0.019 | PROPYLENE CARBONATE | | |
| Degradability | : not | MANGANESE DIOXIDE | Source | : ACROS |
| | readily | PROPYLENE CARBONATE | Source | : IUCLID |

12.3. Bioaccumulative potential

| | | | | |
|--------------------|-----------------|------------------------------------|--------|-------------------|
| Biochemical factor | : not traceable | | | |
| Log Po/w | : <0 | MANGANESE DIOXIDE | Source | : IUCLID |
| | -0.49 | LITHIUM TRIFLUOROMETHANESULPHONATE | Source | : Easi View |
| | -0.48 | PROPYLENE CARBONATE | Source | : IUCLID |
| | -0.21 | DIMETHOXYETHANE, 1,2- | Source | : ChemDat (Merck) |

12.4. Mobility in soil

| | | | | |
|----------------|----------------------|------------------------------------|--------|-------------|
| Henry Constant | : 9.92E-8 atm m3/mol | LITHIUM TRIFLUOROMETHANESULPHONATE | Source | : Easi View |
| | 3.63E-4 atm m3/mol | PROPYLENE CARBONATE | Source | : Easi View |

12.5. Results of PBT and vPvB assessment

Data not available.

12.6. Other adverse effects

Remarks on ecotoxicity : none

13. Disposal considerations

13.1. Waste treatment methods

Remainder material has to be incinerated in_a proper installation or dumped on an approved landfill, in accordance with local and national legislation.

14. Transport information

14.1. UN number

ADR/RID : 3090
IMDG/IMO : 3090
IATA/ICAO : 3090

Remarks IATA/ICAO : The product must be transported in accordance with the regulations of IATA PACKING INSTRUCTION 968 - SECTION IA (Meets the GENERAL REQUIREMENTS of IATA PACKING INSTRUCTION 968).
The batteries meet the requirements of each test of the "UN Manual of Tests and Criteria, Part III, subsection 38.3".

14.2. UN proper shipping name

ADR/RID : LITHIUM METAL BATTERIES
IMDG/IMO : LITHIUM METAL BATTERIES
IATA/ICAO : LITHIUM METAL BATTERIES

14.3. Transport hazard class(es)

ADR/RID : 9 IMDG/IMO : 9 IATA/ICAO : 9

14.4. Packing group

ADR/RID : none IMDG/IMO : none IATA/ICAO : none

14.5. Environmental hazards

Marine pollutant : no

14.6. Special precautions for user

Hazard identification number (ADR/RID) : none
EmS (IMDG/IMO) : F-A, S-I

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Data not available.

15. Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

- Data not available.

15.2. Chemical safety assessment

- Data not available.

16. Other information

Remarks on SDS : The presence of lithium-batteries gives an enlarged risk of fire.

Overview relevant H-sentences from all components in section 3

H225 Highly flammable liquid and vapour.
H260 In contact with water releases flammable gases which may ignite spontaneously.
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.
H360FD May damage fertility. May damage the unborn child.
H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.
EUH014 Reacts violently with water.
EUH019 May form explosive peroxides.

Overview relevant hazard statements from all components in section 3

| | |
|----|------------------|
| C | CORROSIVE |
| F | HIGHLY FLAMMABLE |
| T | TOXIC |
| Xi | IRRITANT |
| Xn | HARMFUL |

Overview relevant R-sentences from all components in section 3

| | |
|----------|--|
| 11 | Highly flammable. |
| 14/15 | Reacts violently with water, liberating extremely flammable gases. |
| 19 | May form explosive peroxides. |
| 20 | Harmful by inhalation. |
| 20/22 | Harmful by inhalation and if swallowed. |
| 34 | Causes burns. |
| 36 | Irritating to eyes. |
| 36/37/38 | Irritating to eyes, respiratory system and skin. |
| 60 | May impair fertility. |
| 61 | May cause harm to the unborn child. |
| 62 | Possible risk of impaired fertility. |
| 63 | Possible risk of harm to the unborn child. |

Training advice

Provide adequate information, instruction and training for operators.

A key or legend to abbreviations and acronyms used in the safety data sheet

| | |
|-----------|---|
| REACH | Registration, Evaluation and Authorisation of CHemicals |
| GHS | Globally Harmonised System of Classification and Labelling of Chemicals |
| CAS | Chemical Abstracts Service |
| TGG = TWA | Time Weighted Average |
| LEL | Lower Explosive Limit |
| UEL | Upper Explosive Limit |
| ADR | Accord européen relatif au transport international des marchandises Dangereuses par Route |
| RID | Règlement concernant le transport international ferroviaire des marchandises dangereuses |
| UN | United Nations |
| IMDG | International Maritime Dangerous Goods |
| IMO | International Maritime Organization |
| IATA | International Air Transport Association |
| ICAO | International Civil Aviation Organization |
| EmS | Emergency Schedule |

* Point to alterations with regard to the previous version.

The information provided in this Material Safety Data Sheet is correct to the best of the knowledge, information and belief of Philips Electronics Nederland B.V. at the date of its printing.